

**Notice of Allowability**

Application No.

10/733,253

Examiner

Dan I. Davidson

Applicant(s)

KIM ET AL.

Art Unit

2651

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to December 12, 2003.
2. ☒ The allowed claim(s) is/are 1-28.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some\* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 12122003
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

### **EXAMINER'S AMENDMENT AND REASONS FOR ALLOWANCE**

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Greg Harper on September 23, 2005.

The application has been amended as follows:

- (1) In claim 10, line 3, "the" has been replaced with --an--.
- (2) In claim 18, line 1, --error rate-- has been inserted before "based".
- (3) In claim 24, lines 2-3, "having the hard disk drive system" has been deleted.
- (4) In claim 26, line 8, --based on the level of TPTP-- has been inserted after "coil".

2. The following is an examiner's statement of reasons for allowance:

Re claim 1; the prior art of record, and in particular Kassab (US 5,687,036 A), Madsen et al (US 5,600,500 A), and Kanota et al (US 4,967,289), fails to teach or suggest measuring an error rate at a maximum OSC; and determining a degree of TPTP by measuring a difference between the minimum error rate and the error rate at the maximum OSC.

Re claim 10; the prior art of record, and in particular Kassab (US 5,687,036 A), Madsen et al (US 5,600,500 A), and Kanota et al (US 4,967,289), fails to teach or suggest measuring an error rate at a maximum OSC; determining a degree of TPTP by

Art Unit: 2651

measuring a difference between the minimum error rate and the error rate at the maximum OSC; and determining degrees of adjusting a write current and the OSC versus temperature, based on the determined degree of TPTP.

Re claim 17; the prior art of record, and in particular Kassab (US 5,687,036 A), Madsen et al (US 5,600,500 A), and Kanota et al (US 4,967,289), fails to teach or suggest measuring a maximum data error rate at a maximum OSC; determining a high level of TPTP if a difference between the minimum data error rate and the maximum error rate is greater than or equal to a predetermined threshold; and adjusting the recording coil current of the hard disk drive system during write operations based on the level of TPTP.

Re claim 25; the prior art of record, and in particular Brunnett et al (US 2004/0100255 A1), fails to teach or suggest at least one storage area storing a plurality of hard disk drive commands including a level of TPTP and current control parameters based on the level of TPTP for the recording coil; and a controller that develops the current control parameters for the recording coil of the read/writing head based on the level of TPTP, and downloads the current control parameters to the at least one storage area to be recalled while controlling the recording coil current.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Art Unit: 2651

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bonin et al (US 6,876,509 B2) teach conducting a tunneling current through a gap between a slider and a medium to allow for adjustment of the fly height spacing between the slider and the medium.

Pleiss (US 6,867,940 B2) teach applying a preheat electrical current through a conductive coil of a write element to compensate for low pole tip protrusion while the first few data sectors on the disk are written.

Brunnett et al (US 2004/0100255 A1) teach a PTP test subsystem that stresses the disk drive during a PTP test mode to induce a PTP condition represented by head-disk contact, and accordingly to the determine write current during normal disk drive operation.

Himle et al (US 6,717,759 B1) teach controlling a write current duty cycle when writing data to a disk drive to hinder PTP.

Kassab (US 5,687,036 A) teaches optimizing write current at each of a plurality of locations on a disk by selecting write currents that minimize the occurrence of repeatable, hard read errors.

Madsen et al (US 5,600,500 A) teach optimizing write current in a data storage system by measuring a bit error rate in the storage system as a function of the write current in the presence of background interference stress and adjacent track interference stress.

Art Unit: 2651

Kanota et al (US 4,967,289 A) teach varying recording current in a data recording/playback apparatus as a function of the bit error rate.


4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dan I. Davidson whose telephone number is (571) 272-7552. The examiner can normally be reached on Monday-Friday from 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Hudspeth, can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DID

Dan I Davidson  
September 23, 2005

  
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